

**Secure Spread Spectrum Watermarking for  
Multimedia (1995) (Make  
Corrections) (222 citations)**

Ingemar J. Cox, Joe Kilian, Tom Leighton, Talal Shamoan  
IEEE Transactions on Image Processing



[Home/Search](#) [Bookmark](#) [Context](#)

[Related](#)

[\(Enter summary\)](#)

view or download:

[nec.com/pub/ingemar/pa...watermark.ps.Z](http://nec.com/pub/ingemar/pa...watermark.ps.Z)

[nec.com/tr/necitr9510.ps](http://nec.com/tr/necitr9510.ps)

Cached: [PS.gz](#) [PS](#) [PDF](#) [DjVu](#) [Image](#) [Update](#) [Help](#)

From: [mediasec.com/pub/related](http://mediasec.com/pub/related) [\(more\)](#)

From: [nec.com/tr/](http://nec.com/tr/)

Homepages: [I.Cox](#) [J.Kilian](#)

[T.Leighton](#) [T.Shamoan](#)

[HPSearch](#) [\(Update Links\)](#)

Rate this article: 1 2 3 4 5 (best)

[Comment on this article](#)

**Abstract:** We describe a digital watermarking method for use in audio, image, video and multimedia data. We argue that a watermark must be placed in perceptually significant components of a signal if it is to be robust to common signal distortions and malicious attack. However, it is well known that modification of these components can lead to perceptual degradation of the signal. To avoid this, we propose to insert a watermark into the spectral components of the data using techniques analogous to spread... [\(Update\)](#)

**Context of citations to this paper:** [More](#)

.... Coventry, CV4 7AL United Kingdom email: yaozhen ieee.org **ABSTRACT** Conventional approaches to embedding digital watermarks [1] are done by adjusting spatial pixel values or frequency coefficients. We propose a novel way to achieve attack detection by calculating the image...

...most algorithms, a watermark is usually embedded into the spectral domain [1] of an image. The embedded watermark can be detected with [2] or without [1] the use of the original image. To make efficient trade offs between robustness and invisibility of a watermark, some...

**Cited by:** [More](#)

A Framework for Evaluating the Data-Hiding Capacity of.. - Moulin, Mihçak (2002) [\(Correct\)](#)

A Novel Semi-Private Watermarking Technique - Oscar [\(Correct\)](#)

Secure Error-Free Steganography for JPEG Images - Lee, Chen [\(Correct\)](#)

**Similar documents (at the sentence level):**

**68.8%:** A Secure, Robust Watermark for Multimedia - Cox, Kilian, Leighton, Shamoan (1996) [\(Correct\)](#)

**15.0%:** A Short Summary of Digital Watermarking Techniques for.. - Duan, King [\(Correct\)](#)

**Active bibliography (related documents):** [More](#) [All](#)

**0.6:** Digital Watermarks For Audio Signals - Boney (1996) [\(Correct\)](#)

**0.3:** Steganalysis of additive noise modelable information hiding - Harmsen, Pearlman (2003) [\(Correct\)](#)

**0.3:** A review of watermarking and the importance of perceptual modeling - Cox, Miller (1997) [\(Correct\)](#)

**Similar documents based on text:** [More](#) [All](#)

**0.4:** Resistance of Digital Watermarks - To Collusive Attacks [\(Correct\)](#)

**0.3:** Rotation, Scale, and Translation Resilient Watermarking.. - Lin, Wu, Bloom, Cox, al. (2001) [\(Correct\)](#)

**0.1:** Robustness and Security of Digital Watermarks - Matheson, Mitchell, Shamoan.. (2000) [\(Correct\)](#)

**Related documents from co-citation:** [More](#) [All](#)

**41:** Techniques for Data Hiding (context) - Bender, Gruhl et al. - 1995

**27:** Towards robust and hidden image copyright labeling - Koch, Zhao - 1995

**25:** A digital watermark - van Schyndel, Tirkel et al. - 1994

**BibTeX entry:** [\(Update\)](#)

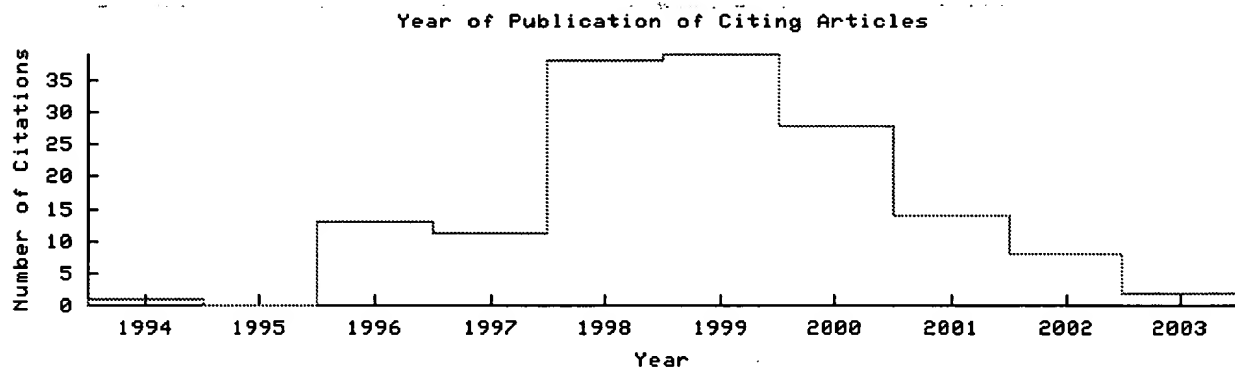
I. J. Cox, J. Kilian, T. Leighton, and T. Shamoan. Secure Spread Spectrum Watermarking for Multimedia. Technical Report 95-10, NEC Research Institute, Princeton, NJ, 1995.

<http://citeseer.nj.nec.com/cox95secure.html> [More](#)

```
@article{ cox97secure,
  author = "Ingemar Cox and Joe Kilian and Tom Leighton and Talal Shamooh",
  title = "Secure Spread Spectrum Watermarking for Multimedia",
  journal = "IEEE Transactions on Image Processing",
  volume = "6",
  number = "12",
  pages = "1673--1687",
  year = "1997",
  url = "citeseer.nj.nec.com/cox95secure.html" }
```

**Citations (may not include all citations):**

- 524 Digital Image Processing (context) - Gonzalez, Woods - 1993 **Book Details from Amazon or Barnes & Noble**
- 491 Three Dimensional Computer Vision: A Geometric Viewpoint (context) - Faugeras - 1993
- 382 Robust Statistics (context) - Huber - 1981
- 284 Kluwer Academic Publishers (context) - Gersho, Gray et al. - 1992
- 165 Techniques for data hiding (context) - Bender, Gruhl et al. - 1995
- 91 Signal compression based on models of human perception (context) - Jayant, Johnston et al. - 1993
- 75 Towards robust and hidden image copyright labeling - Koch, Zhao - 1995
- 74 Theory of spread spectrum communications - a tutorial (context) - Pickholtz, Schilling et al. - 1982
- 58 Electronic marking and identification techniques to discoura.. - Brassil, Low et al. - 1994
- 58 Collusion-secure fingerprinting for digital data - Boneh, Shaw - 1995
- 49 A digital watermark - van Schyndel, Tirkel et al. - 1994
- 49 Cryptology for digital tv broadcasting (context) - Macq, Quisquater - 1995
- 43 Assuring ownership rights for digital images - Caronni - 1995
- 33 Embedding secret information into a dithered multilevel imag.. (context) - Tanaka, Nakamura et al. - 1990
- 23 Copyright protection for multimedia data (context) - Koch, Rindfrey et al. - 1994
- 22 Secret-key agreement without public-key cryptography (context) - Leighton, Micali - 1993
- 17 Dynamic histogram warping of images pairs for constant image.. - Cox, Roy et al. - 1995
- 11 Digital data security system (context) - Turner - 1989
- 10 Video-steganography (context) - Matsui, Tanaka - 1994
- 5 Digital signal encoding and decoding apparatus (context) - Adelson - 1990
- 3 Receiver-compatible enhanced definition television system (context) - Schreiber, Lippman et al. - 1991
- 3 Two-Dimensional Signal Processing (context) - Lim - 1990



The graph only includes citing articles where the year of publication is known.

[Online articles have much greater impact](#) [More about CiteSeer](#) [Add search form to your site](#) [Submit documents](#) [Feedback](#)

CiteSeer - [citeseer.org](http://citeseer.org) - [Terms of Service](#) - [Privacy Policy](#) - Copyright © 1997-2002 [NEC Research Institute](#)